

## CLAIMS

1. A servo motor control system in which a numerical control device and at least one servo amplifier are connected to each other with a serial bus to control a servo motor connected to the servo amplifier, wherein

at least two types of data transfer systems are prepared for the serial bus, and

a data transfer system is selected by a parameter which has been set in the numerical control device.

2. The servo motor control system according to claim 1, wherein the servo amplifier discriminates and determines a data transfer system on the basis of a frequency of signal change for a predetermined time in a received signal on the serial bus so that the servo amplifier is adaptable to a plurality of data transfer systems.

3. The servo motor control system according to claim 1, wherein

a plurality of servo motors are connected to the numerical control device with a serial bus by a daisy chain system,

each servo amplifier includes means for measuring a frequency of signal change for a predetermined time in a received signal on the serial bus and discriminating a data transfer system on the basis of the measured frequency of signal change, and

at least a servo amplifier except for a most downstream servo amplifier in the daisy chain system includes first and

second connectors for the serial bus, discriminates a data transfer system of the serial bus in the first connector on the basis of a signal received by the first connector and said discriminating means, and determines a data transfer system of the second connector on the basis of the discrimination result so that a servo amplifier connected to an upstream or a downstream in the daisy chain system is adaptable to a plurality of data transfer systems.

4. A servo motor control system in which a numerical control device and at least one servo amplifier are connected to each other with a serial bus to control servo motors connected to the servo amplifier, wherein

at least two types of data transfer systems are prepared for the serial bus, and

said numerical control device comprises:

means for changing the frequency of signal change for a predetermined time in the data on the serial bus on the basis of a data transfer system selected from the at least two data transfer systems;

means for monitoring data on the serial bus received from the servo amplifier connected to the serial bus to measure the frequency of signal changes for predetermined time, and deciding, on the basis of the measured frequency, whether the data transfer system of the servo amplifier is changed into the selected data transfer system or not; and

means for performing communication by the selected data transfer system when said deciding means decides that the data

transfer system is changed, and changing the data transfer system again when said deciding means decides that the transfer system is not changed and then searching for a possible data transfer system.

5. The servo motor control system according to claim 4, wherein the servo amplifier discriminates a data transfer system on the basis of a frequency of signal changes for a predetermined time in a received signal on the serial bus, and transmits a signal having the same frequency of the signal change as that of the received signal when it is determined that the data transfer system is adaptable to the servo amplifier, so that the servo amplifier is adaptable to a plurality of data transfer systems.

6. The servo motor control system according to claim 5, wherein

a plurality of servo amplifiers are connected to the numerical control device with a serial bus by a daisy chain system,

each servo amplifier includes means for measuring a frequency of signal change for a predetermined time in a received signal on the serial bus and discriminating a data transfer system on the basis of the measured frequency of signal change, and

at least a servo amplifier except for a most downstream servo amplifier in the daisy chain system includes first and second connectors for the serial bus, discriminates a data transfer system of the serial bus in the first connector on

the basis of a signal received by the first connector and said discriminating means, and determines a data transfer system of the second connector on the basis of the discrimination result so that a servo amplifier connected to an upstream or a downstream in the daisy chain system is adaptable to a plurality of data transfer systems.

7. The servo motor control system according to any one of claims 1 to 6, wherein data is coded such that the frequency of signal changes per predetermined period of time set in discrimination of a transfer system is different from that in data transfer.

8. The servo motor control system according to any one of claims 1 to 6, wherein the serial bus employs an optical communication system, the numerical control device and the servo amplifier have optical modules, respectively, and, when transfer bit rates of at least two types are used, the optical modules regulate emission intensities of light-emitting elements according to the transfer bit rates.